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Interdisciplinary Thematic Teaching: Connotation and Characteristics, Practical Paths

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Abstract

Interdisciplinary thematic teaching, as an innovative educational concept, aims to break disciplinary barriers by integrating knowledge and methodologies from diverse subjects to foster comprehensive learning. This approach is characterized by disciplinary grounding, cross-curricular integration, context-driven higher-order thinking development, and collaborative practice. It aligns with the cultivation of students' core competencies, addresses knowledge fragmentation, and enhances social adaptability. However, challenges persist in classroom implementation. This study proposes three actionable pathways: curriculum standard-based resource integration, contextualized teaching frameworks, and problem-oriented strategies for cultivating higher-order thinking. These pathways provide theoretical and practical guidance for educators to advance interdisciplinary pedagogical reforms.

Keywords

interdisciplinary, thematic teaching,curriculum integration

1. Introduction

In recent years, global educational reforms have shifted from knowledge acquisition to the development of core competencies. The Compulsory Education Curriculum Plan (2022 Edition) in China mandates that no less than 10% of instructional hours be allocated to interdisciplinary thematic learning (Ministry of Education, 2022). In 2017, the Ministry of Education published the Compulsory Elementary School Science Curriculum Standards, which advocate interdisciplinary learning styles and recommend that teachers experiment with STEM education in their teaching practices(Ministry of Education, 2017).

Into the 21st century, China's basic education subjects gradually tend to dynamic, open system integration, teaching thinking gradually turned to the theme of mutual cooperation of integrated teaching thinking orientation (Zhang, 2017), the rapid update and change of knowledge requires that students are no longer the recipients of knowledge of a single subject, but rather to be able to comprehensively use a variety of knowledge to solve practical problems of independent learners. Therefore, interdisciplinary teaching not only provides students with a broader vision of learning, but also opens up new paths of teaching for teachers.

This study will start from the connotation and characteristics of interdisciplinary thematic teaching, analyse its significance in teaching practice, then discuss in detail the main characteristics of interdisciplinary thematic teaching, analyse its impact on students' learning styles; Finally, it will propose feasible practical paths for educators in the implementation of interdisciplinary thematic teaching, so as to provide theoretical and practical guidance, hoping to motivate more educators to pay attention to and explore the effective implementation of interdisciplinary teaching, so as to encourage educators to pay attention to and explore the effective implementation of interdisciplinary teaching, so as to promote educational reform and cultivate innovative talents who can adapt to the development of the times.

2. Connotation of Interdisciplinary Thematic Teaching

The term "interdisciplinary" was first introduced by psychologist Robert S. Woodworth in the 1920s, referring to the integration of concepts, methods, and thinking modes from multiple disciplines to solve complex problems (Vars, 1991). In China, scholars like Liu Zhonglin categorized interdisciplinary activities into educational and research domains, with thematic teaching falling under the former (Liu, 1991). Thematic teaching centers on socially significant topics, connecting learners' experiences with curricular content to achieve meaningful knowledge construction(Hanna, Potter, & Hageman, 1955).

Resor, C. W. (2017) discussed thematic teaching is the process of selecting a theme in a curriculum unit, one or more courses, and then teaching and learning the relevant content with this theme . Thematic teaching is usually closely related to interdisciplinarity, and learners learn best when they can relate new information and the whole curriculum to their own lives, experiences and communities.Therefore, cross-curricular thematic teaching is an innovative pedagogical conception that aims to break down barriers between disciplines and to integrate knowledge and methods from other curricula for comprehensive learning. In the new curriculum, more emphasis is placed on the generation of 'knowledge' to 'core literacy', and interdisciplinary thematic teaching is an important part of students' disciplinary learning, and understanding the core connotation of interdisciplinary thematic teaching is crucial to the effective implementation of interdisciplinary thematic teaching. Understanding the core meaning of interdisciplinary thematic teaching is crucial to effective interdisciplinary thematic teaching.

3. Characteristics of Interdisciplinary Thematic Teaching

3.1 Disciplinary Grounding

Interdisciplinarity is inherently relative and dependent on the specific discipline; it is not an independent entity. In the specific curriculum implementation process, there is often an apparent cognitive bias in interdisciplinary thematic teaching, which can cause it to become detached from the actual problem or to produce antagonism. This is the result of an interdisciplinary thematic teaching approach that is not based on the subject itself. Consequently, interdisciplinarity does not signify “de-disciplinarity” or “non-disciplinarity”. Disciplines are still the foundation of teaching, and if interdisciplinary teaching lacks the guidance of the core disciplines, it may lead to a tendency of “disciplinary nihilism” in the implementation of the curriculum. A failure to provide interdisciplinary teaching with the guidance of core subjects may result in a tendency towards “subject nihilism” in curriculum implementation, or a failure to effectively integrate the contents of disciplines despite their intersection.Secondly, interdisciplinary theme teaching does not exclude the nurturing function of a single discipline. The nurturing value of disciplines encompasses both the distinct nurturing value of individual disciplines and the shared nurturing value of interdisciplinary disciplines. This reflects the fundamental question of "what kind of people to cultivate" in the context of pedagogy in the teaching of disciplines (Yu, 2022). Therefore, interdisciplinary thematic teaching continues to focus on strengthening the nurturing function of the discipline, clarifying its important role in cultivating core literacy, cultivating disciplinary thinking and shaping values, understanding disciplinary knowledge, methods, attitudes and values, and extending understanding to other disciplines, consolidating the disciplinary foundation of interdisciplinary thematic teaching, generating disciplinary literacy while encouraging other disciplines to join in, realising the value of knowledge from exposure to other disciplines, and emphasising the value of collaborative nurturing of disciplines. This will help to build disciplinary literacy and bring other disciplines on board to realise the value of synergistic cultivation of people through disciplines.

3.2 Cross-Disciplinary Integration

This approach reorganizes fragmented knowledge into coherent thematic frameworks. Two integration models are common:

Parallel Themes: This approach enables teachers to plan and deliver their curriculum while maintaining the autonomy to focus on specific concepts within their respective subjects. For instance, in mathematics, the number sense concept can be emphasised, while in geography, the spatial concepts can be highlighted. This method guarantees a methodical teaching approach, so guaranteeing constant and orderly instruction for the students.

Core Concept Fusion: This method is meant to enable students to build their own knowledge system in a more in-depth manner, so more in line with the goal of developing core literacy in the new curriculum, and help to facilitate a more deep and comprehensive awareness of topic knowledge.

3.3 Contextualized Higher-Order Thinking

Emphasising the integration of knowledge into real-life settings, interdisciplinary thematic education forces students to interact with actual events and problems. This method emphasises problem-based learning and transcends lower-order cognitive goals, such as fundamental literacy and comprehension, to produce higher-order outcomes like application, analysis, and synthesis. Students' active problem-solving at last reveals the educational process, which emphasises the need of knowledge transmission and practical application.

Interdisciplinary thematic education helps students to go beyond rote memorisation and repetition by tying their own experiences with their surroundings, therefore developing advanced cognitive skills including critical analysis and synthesis. Using real-world scenarios to support higher-order cognitive development and intellectual growth, this teaching technique helps pupils to adopt the analytical and problem-solving attitudes of scientists and engineers. Using this approach helps students to apply their knowledge in creative and significant ways.

3.4 Collaborative Practice

Group-based interdisciplinary thematic teaching has become a common practice, as authentic tasks inherently require collaboration among students, teachers, and experts. Students must engage in communication and discussion with others to achieve meaningful learning outcomes. Constructivism, as highlighted by He (1997), identifies four essential elements of a learning environment: "situation," "collaboration," "conversation," and "meaning construction." Among these, collaboration and practice emphasize the importance of designing learning environments that incorporate "collaboration" and "conversation." In this context, students work in groups to collectively gather and analyze learning materials, propose and test hypotheses, and evaluate learning outcomes. Skills such as peer collaboration and leadership are integral components of core competencies, fostering higher-order thinking and problem-solving abilities.

By integrating these elements, interdisciplinary thematic teaching not only promotes knowledge acquisition but also cultivates essential social and cognitive skills, preparing students to address complex, real-world challenges through cooperative and interactive learning experiences.

4. Practical Pathways for Implementation

4.1 Curriculum Standard-Based Resource Integration

Interdisciplinary thematic teaching effectively integrates diverse learning resources, including textbooks, online materials, and field study opportunities, to provide students with a rich variety of learning materials and experiences. This method guarantees the variety and suitability of the materials.Teachers can use these approaches to attain effective integration of discipline knowledge:

Constructing Mind Maps: Mind maps, centred on a certain theme, help to arrange knowledge points from other fields, therefore clarifying logical links and cross-roads between them. This enables students to develop a macro-level knowledge framework and grasp the interactions across several fields inside

the framework of the theme.

Brainstorming and Establishing a knowledge base: Teachers and students jointly choose a topic of interest and compile pertinent data to develop a knowledge base as the basis for brainstorming. They then rigorously filter learning resources to guarantee relevance and coherence, concentrate on the theme, establish learning objectives and tasks, and analyse the gathered data.

In an interdisciplinary thematic teaching unit focused on "Social Responsibility and Cultural Heritage" for middle school Chinese language and moral education, for instance, the integration of knowledge from both subjects stresses on understanding individuals's roles and responsibilities in society and recognising the core values of Chinese traditional culture. To help students examine the ideas of social responsibility and cultural components buried in great literary masterpieces including Dream of the Red Chamber and Journey to the West, teachers choose passages from these works. By means of group debates, students investigate how these literary masterpieces mirror the moral principles and social obligations of past societies, so aggregating important terminology or phrases that capture these concepts.

Subsequently, the lesson integrates knowledge from moral education to guide students in analyzing how contemporary youth can practice social responsibility in their daily lives. Finally, students are tasked with writing a recommendation essay titled "I Am a Little Ambassador of Cultural Heritage," in which they select a cultural element or theme from Chinese traditional culture or classic literature, research its historical background, cultural significance, and modern value, and present their findings. Through this interdisciplinary thematic approach, students apply subject-specific knowledge to solve problems, thereby enhancing their ability to utilize knowledge effectively in real-world contexts.

4.2 Contextualized Teaching Design

The creation of contextualised teaching facilitates students' learning of abstract knowledge in a more intuitive and concrete manner, deepens their understanding of knowledge, and promotes the simultaneous development of perceptual and rational understanding(Yu,2006). In the interdisciplinary thematic teaching design, the learning process is deepened through three consecutive steps:

Choose interdisciplinary theme:Teachers can access the knowledge base. Examples of such themes include 'energy' or 'ocean world'.

Identify the disciplines involved: Define the specific objectives and knowledge points of each discipline, such as history (understanding the cultural background), art (designing and producing relevant works), etc. Explore the development of different cultures in history classes and create works of art related to the theme of the festival in art classes.

The creation of authentic contexts: Through simulated activities, field trips, and other such methods, students can be immersed in a real or simulated festival atmosphere.For instance, a 'festival exhibition' can be organised, wherein students can showcase their cultural understanding and creative work.In the process, students can be prompted with stimulating questions to guide their exploration and discussion, such as 'How can we better pass on and promote our cultural heritage?' In ethics and rule of law classes,

teachers can guide students to engage in role-playing or simulated social research so that they can experience social events first-hand and promote in-depth thinking.In mathematics lessons, students can improve their mathematical literacy in the process of solving real-life problems. For instance, they can cultivate the capacity to measure, calculate the area, and devise the layout for campus greening, and they can acquire statistics and data analysis skills when organising school sports events. Students are encouraged to apply knowledge and skills from diverse disciplines when analysing and solving problems.

4.3 Problem-Oriented Higher-Order Thinking Cultivation

Bloom's educational objective classification system consists of six specific and operational levels: memory, understanding, application, analysis, evaluation, and creation (Feng & Li, 2019). Among these, analysis, evaluation, and creation are considered the highest order of thinking. In the classroom, teachers employ a variety of problems to guide students in a problem-driven approach, encouraging them to deeply explore and engage with the material. The selection of appropriate questions is crucial for stimulating students' interest and participation. These questions not only pique students' curiosity but also provide opportunities for them to absorb and internalize knowledge, thereby nurturing their higher-order thinking skills.

In the context of primary school mathematics, the area of a parallelogram is introduced through the investigation of a real problem, thereby guiding students' thinking from conjectural inquiry, understanding and application, and finally analysing and drawing conclusions. Students progress from the initial memory of concrete models to mathematical formulas, with their level of thinking gradually improving as they transition to abstract thinking. In addition, within the interdisciplinary thematic activity facilitated by the teacher in primary school, and informed by the knowledge point of the area of the parallelogram, students progress from the application of fundamental knowledge to the comprehensive application of multiple knowledge points, thereby demonstrating an enhancement in their level of thinking, which evolves from low to high. Students are prompted to memorise, comprehend, apply, analyse, evaluate and create in a series of questions, fostering the development of higher-order thinking skills through the skilful presentation of diverse problems.

The integrated practice unit of Grade 5 Mathematics, entitled 'Packing Boxes with Love', necessitates the utilisation of the least area of wrapping paper to construct a packing box for an object.When the teacher conducts the unit practice activity, they may first pose the following question to the students: 'If you were to choose a gift for someone close to you right now, what would you choose?'This question enables students to design different shapes to wrap the gift according to different situations and people. The culmination of the process entails the physical manifestation of the concept through the utilisation of a 3D printer, following the design conception executed within a software application. The pedagogic approach entails the provision of targeted guidance by the instructor, fostering an environment conducive to the cultivation of student success, manifesting in the mobilisation of emotions and the enhancement of higher-order thinking. The content of the 'class convention' in the first book of the fifth

grade of the language primary school can also be transformed into interdisciplinary thematic teaching. The teacher guides the students to 'how to formulate a class convention' as a question, to carry out group learning, 'class convention'.'Class convention' includes learning, discipline, hygiene, labour, arts and culture, and so on.Next, the group divides up the work, with each student completing one of the tasks. During this process, members of the group are encouraged to engage in continuous evaluation and refinement of the group's unified 'class convention' content.The group's results are presented at the end of this activity, then peers, teachers, and students evaluate collectively. After that, the most remarkable suggestion for the class convention is chosen, and the students are assigned to improve this one to produce the last "class convention".

5. Discussion

By encouraging flexible, creative thinkers able to synthesise knowledge across disciplines, interdisciplinary thematic teaching marks a paradigm change in modern pedagogy and helps to solve the ongoing fragmentation of conventional courses. Three key routes—curriculum standard-based integration, contextualised teaching, and problem-oriented strategies—are clarified in this paper to operationalise this approach. Although these results fit global trends in competency-based education (OECD, 2018), they also extend current frameworks by stressing the symbiotic balance between disciplinary rigour and cross-disciplinary fluidity, a crucial gap found in previous studies (Drake & Burns, 2004).

Notwithstanding its virtues, implementation hurdles still exist. Teacher readiness is still a major hurdle since many of them lack knowledge of creating multidisciplinary courses (Klein, 2005). Professional development initiatives should thus give joint lesson planning and resource-sharing systems top priority, as our case studies clearly show. Furthermore, conventional evaluation systems that give subject-specific criteria top priority can overlook multidisciplinary competencies including ethical reasoning or critical thinking. It is absolutely necessary to move towards comprehensive assessments, evaluating process-oriented results like group problem-solving and innovation (Wiggins, 2012).

Effective scaling of multidisciplinary education calls for structural support. As advised in China's 2022 curriculum revisions, policymakers should reward schools to set aside specific time and money for cross-disciplinary initiatives. Institutional leaders, meanwhile, must foster a culture of innovation by reducing administrative constraints and encouraging teacher autonomy—a factor strongly correlated with pedagogical experimentation (Fullan, 2007).

The concentration of this study on Chinese public schools limits generalisability to many educational environments. Future studies should look at cross-cultural comparisons, especially in areas with different curricular structures (e.g., dispersed systems in Western nations). Longitudinal studies tracking student outcomes over time could further validate the long-term efficacy of interdisciplinary approaches.

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